

## Rethinking the Effects of Classroom Activity Structure on the Engagement of Low-Achieving Students

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**Background/Context:** A common perspective found in the literature on classroom activity structures hypothesizes that a whole-class mode of instruction is linked with increased problems of achievement motivation for low-achieving students. If whole-class methods of instruction (e.g., recitation-style question-and-answer sessions) are rich in evaluation and foster social comparisons among students, low-achieving students may become disengaged in an effort to avoid negative evaluations. It is important to consider the evidence on activity structures and engagement carefully because this perspective represents a sweeping critique, concluding essentially that the predominant mode of instruction in American schools is detrimental to achieving widespread educational success.

**Purpose/Objective/Research Question/Focus of Study:** Are whole-class modes of instruction linked with increased problems of achievement motivation and disengagement for low-achieving students?

**Research Design:** This study is a review of research on the association between student engagement and activity structure. We review both quantitative and qualitative studies investigating the link between activity structure and student engagement, with an emphasis on studies that identify an interaction between students' level of achievement, activity structure, and engagement. In interpreting the evidence, we focus on studies of classroom discourse—particularly studies of dialogic and scaffolding instruction, which illustrate variability in the effects of whole-class instruction on student engagement.

**Conclusions/Recommendations:** Although many relationships between motivational climates and levels of engagement have been clearly documented, we find no conclusive evidence of a link between whole-class instruction and disengagement among low-achieving students. Research on classroom discourse illustrates that the activities that constitute whole-class instruction are not inherently problematic for low-achieving students and can, in fact, promote engagement.

For achievement growth to occur, students must be actively engaged in the learning process. Engagement refers both to affective dimensions of classroom experience, such as a student's interest in school or appreciation of a particular task, and to behaviors, such as participating in classroom discourse and completing assignments (Fredericks, Blumenfeld, & Paris, 2004). Research has conclusively demonstrated that low-achieving students are less engaged in classroom activities and less inclined toward schooling in general than their higher achieving peers (Finn, 1993; McKinney, Mason, Perkinson, & Clifford, 1975; National Research Council and Institute of Medicine [NRC], 2004; Roeser, Eccles, & Sameroff, 2000; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003; Valeski & Stipek, 2001; Voelkl, 1997). Low engagement is an important concern because it contributes to a cycle of reduced achievement growth for students who enter school with weaker skills than their classmates.

Recent examinations of engagement acknowledge that it is not a *student* problem, but related to complex interactions of teaching and learning in classrooms; the climate, organization, and size of the school; and family, community, and peers, among other determinants (NRC, 2004). Among these factors, there has been a consistent emphasis in student engagement research on the motivational climate of classrooms. It is the choice of curriculum and instructional methods, as well as the social organization of classrooms, this research argues, that provides the context for problems of achievement motivation and student engagement. Because empirical research consistently documents a correlation between low achievement and reduced engagement, it is important to consider the common instructional contexts in which students learn and the effects of these contexts on the distribution of student engagement among high- and low-performing students. Ultimately, this question bears on how classroom instruction might be tailored to foster widespread engagement.

The classroom activity structure, whether teachers use whole-class modes of instruction or small-group and individualized modes of instruction, is conceptualized as an important determinant of a classroom's motivational climate (e.g., Stodolsky, 1988). In this article, we reconsider a common perspective found in the literature on classroom activity structures: that a



whole-class mode of instruction is linked with increased problems of achievement motivation for low-achieving students (e.g., Goodlad, 1984; Yair, 2000). This perspective represents a sweeping critique, concluding essentially that the predominant mode of instruction in American schools is detrimental to achieving widespread educational success.

#### PERVASIVE CONCERNS ABOUT WHOLE-CLASS INSTRUCTION

Ames (1992), writing on student motivation in the classroom, presented a thought experiment comparing two teachers, Mr. D. and Mr. R., who use different activity structures. Both teachers present a mathematics problem. The students in Mr. D.'s class spend 5 minutes working individually before Mr. D. asks the class to offer solutions. In Mr. R.'s class, the 5 minutes is spent in small groups solving the problems, before asking "the groups to share their solutions with each other" (p. 264). Presumably, although individual students contribute their thinking, the response is given by the group or a student on behalf of the group. Ames would like us to imagine that

in both situations, the teacher has tried to select problems with multiple paths to solution and has tried to create a low-risk situation, but in Mr. D.'s class, few students volunteer and even fewer actually remember the problem or solutions once class has ended. In contrast, more students participate in Mr. R.'s class, and the discussion reflects the active involvement of strategic thinking. (p. 264)

In her conclusion to this thought experiment, Ames seemed to articulate the belief that a change in activity structure *in and of itself* will lead to more widespread levels of student engagement. Mr. D.'s instruction is identical to Mr. R.'s, with the exception that students carry out the task and consider the results in small groups.

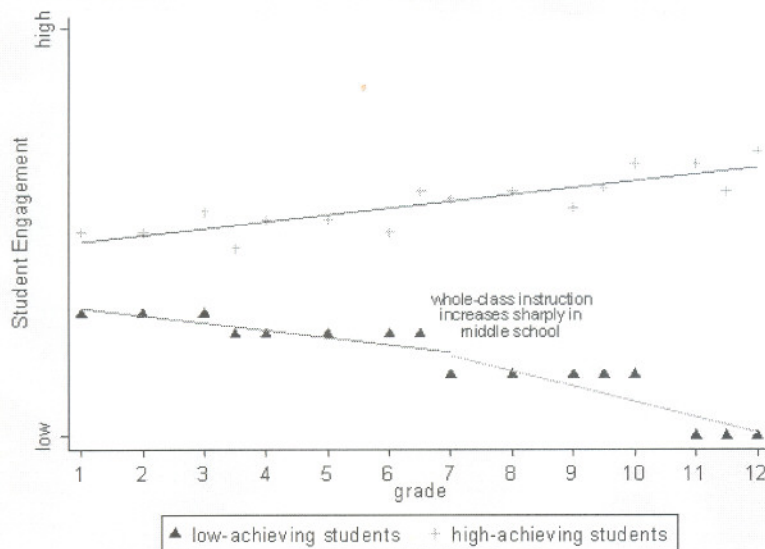
The assertion that the classroom activity structure is linked to student engagement is widespread, appearing in research by educational psychologists (e.g., Ames, 1992; Eccles & Midgley, 1989) and sociological studies of schooling (Rosenholtz & Rosenholtz, 1981; Rosenholtz & Wilson, 1980; Simpson, 1981; Stodolsky, 1988). Sociological research on schooling, which traditionally emphasizes research on inequality, explicitly positions this problem as one that affects low-achieving students. Educational psychologists have focused primarily on average levels of engagement, but the assumption that whole-class activity structures disproportionately affect low-achieving students is implicit in their theoretical perspectives. The situation in Mr. D.'s class is much less risky for the students who have all the answers.

Several researchers have argued further that the link between activity structure and engagement manifests itself in widespread educational trends. Eccles and Midgley (1989) contended that as students progress from elementary to middle school, they experience several negative changes in instructional environments, including more whole-class task organization. At the same time, they argued, problems of disengagement and detachment from school increase as students move through the grades, with the problem being particularly acute at the transition to middle school. This change in the structure of classroom activities as children progress through school represents a fundamental educational problem, they argued, because it is partly responsible for increasing problems of disengagement and detachment (Eccles & Midgley; Stipek & MacIver, 1989).

#### EVALUATING THE EVIDENCE RELATING ACTIVITY STRUCTURE TO STUDENT ENGAGEMENT AMONG HIGH- AND LOW-ACHIEVING STUDENTS

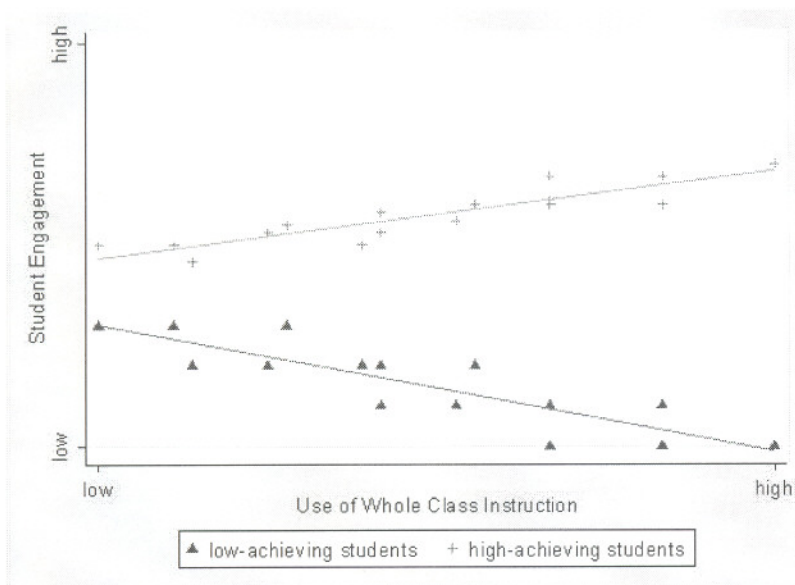
The specific concern that whole-class modes of instruction lead to disengagement, particularly among low-achieving students, is related to two types of arguments, represented in Figures 1 and 2. In Figure 1, differences in engagement among high- and low-achieving students are hypothesized to increase as students progress through school. The key assumption behind this argument is that whole-class activity structures become more common in the later grades. Note that activity structures are not actually observed, but assumed to increase across grades. In Figure 2, classroom activity structure is directly observed, and the inequality in engagement between high- and low-achieving students is compared across different classrooms in which whole-class instruction is common or uncommon. Figure 1 and Figure 2 both illustrate the hypothesized link between activity structure and engagement, but evidence of the form illustrated in Figure 2 is much more robust because classroom activity structures are compared directly.

**Figure 1. Does the inequality in student engagement increase as students progress through school, encountering more frequent use of whole-class instruction?**



[click to enlarge](#)

**Figure 2. Is the inequality in student engagement greater in classrooms that use predominantly whole-class forms of instruction?**



[click to enlarge](#)

Our goal in this article is to evaluate the claims illustrated in Figures 1 and 2. First, we briefly review the theoretical argument linking the overall motivational climate of classrooms to disengagement among low-achieving students. Second, we discuss why activity structure is thought to be an important dimension of the motivational climate of classrooms. Third, we evaluate the empirical evidence on activity structure and student engagement, which takes the forms of Figures 1 and 2, respectively. We find that existing evidence does not persuasively demonstrate that whole-class instruction provides a context in which low-achieving students struggle to be engaged.

In offering this conclusion, we argue that much of the research on classroom activity structures has ignored important differences in the quality of whole-class instruction. We will argue that whether whole-class instruction emphasizes social comparison depends on how it is enacted. We illustrate the variability in whole-class instruction by considering recent research on classroom discourse, which implies that the effect of whole-class instruction on student engagement among low-achieving students does not necessarily cause disengagement and can, in fact, be engaging.

#### THE CLASSROOM LEARNING ENVIRONMENT AND PROBLEMS OF ENGAGEMENT AMONG LOW- ACHIEVING STUDENTS



Student engagement has been the subject of several books and review articles (Finn; 1989; Fredericks et al., 2004; NRC, 2004; Newmann, 1992), and multiple conceptual models of student engagement stress different elements of schooling and sociocognitive development. Underlying these theoretical models and research on student engagement is an emphasis on the student's level of achievement.

#### MOTIVATIONAL CLIMATE AND ENGAGEMENT

Although not the only reason that students become disengaged, models of engagement assume that for most students, engagement is fundamentally linked with school performance in a reciprocal relationship. Poor performance in school leads to low levels of engagement, which in turn has negative effects on future achievement outcomes. This fundamental and well-supported assumption is readily apparent in Finn's (1989) conceptual diagrams of two theories of engagement: the frustration-self-esteem model and the participation-identification model. In the frustration-self-esteem model, unsuccessful school outcomes reduce self-esteem, which leads to problem behaviors. In the participation identification model, unsuccessful school outcomes reduce a student's identification with school (belonging and valuing), which leads to reduced engagement.

Why is performance in school linked with engagement? Rightly or wrongly, students are judged by their performance in school. Students who perform well are judged as competent, whereas those who do not are considered to have low ability, to be less competent. Competence is so important in school and in our society that individuals are considered only as worthy as their ability to achieve (Covington, 1992). The need to establish and maintain a sense of worth and belonging begins in school but is a lifelong process. Moreover, because ability is frequently viewed as a stable personal attribute (Dweck & Leggett, 1988), low-achieving students often see academic success as unattainable and themselves as incompetent and worthless. To protect their self-worth, they often show disregard for the values and standards of schooling by disengaging, which may be manifested by sleeping in class, not completing assignments, or skipping school. Thus, classroom experiences often serve as the impetus for students to enact strategies to protect their self-worth.

#### MOTIVATIONAL CLIMATE AND ACTIVITY STRUCTURE

What is it about instructional experiences that would be so influential as to shift patterns of engagement? Among several important factors related to engagement (e.g., NRC, 2004), evaluation standards are instrumental in students' willingness to engage in schooling (Ames, 1992; Natriello & Dornbusch, 1984). Evaluation is used to assess students' academic progress and achievement and is directly linked to students' perceptions of competence.

In an effort to explain how learning environments might influence achievement motivation, Simpson (1981) and Rosenholtz and Rosenholtz (1981) characterized the classroom learning environment as being either unidimensional or multidimensional. This research focused on the nature of classroom evaluation, with self-competence-related problems emerging in classrooms in which the evaluation of student performance is based on a narrow set of criteria, and the visibility of the evaluation is high (unidimensional). They predicted that these two aspects of evaluation would be closely related to the diversity of classroom tasks performed and whether students could choose tasks. Social comparison would be high when ability group-based instruction or whole-class instruction was in place and when instruction stressed the comparative performance of students. For example, whole-class instruction typically consists of homogenous sets of tasks (e.g., reading aloud, answering questions). Question-and-answer (Q&A) sessions in particular have been characterized as highly evaluative: Teachers initiate an exchange by posing a question, and students respond and then are evaluated publicly by the teacher (i.e., initiation, recitation, and evaluation [IRE] discourse; Mehan, 1979). Under this logic, evaluation, although a distinct instructional activity, is closely linked with classroom activity structures. Unidimensional classrooms, where whole-class instruction predominates, are socially risky classrooms in which low-achieving students are more likely to engage in "failure-avoiding" behavior, such as withdrawing effort to maintain a positive sense of self-worth (Covington, 1992). Thus, in these classrooms, the distribution of student engagement is thought to become polarized, with high-achieving students being engaged and low-achieving students becoming increasingly disengaged (e.g., Figure 2).

The early research on unidimensional versus multidimensional classrooms is consistent with the perspective of educational psychologists using teacher and student reports to link classroom motivational context with problems of achievement motivation. Summarizing the early research conducted on classroom learning environments as related to student motivation, Ames (1986) concluded,

When the learning environment is characterized by social comparative and competitive, as opposed to individualized or mastery-oriented practices, students tend to be focused inward on their own ability to perform and are likely to not feel in control. In these classrooms, self-perceptions of ability are likely to mediate achievement behavior. (p. 250)



In this quote, Ames contrasts social comparative environments, ones that encourage students to focus on their ability level relative to others, with ones that foster a mastery orientation, or the belief that achievement is related to one's effort (Dweck, 1986). Thus, the theoretical argument for the case against whole-class instruction rests on the relation between the evaluation potential that exists in whole-class instruction and the psychological threat to self-worth, particularly for low-achieving students.

#### DO THE DIFFERENCES IN ENGAGEMENT AMONG HIGH- AND LOW-ACHIEVING STUDENTS INCREASE ACROSS GRADE LEVELS?

We now turn to an evaluation of evidence of a link between whole-class instruction and increasing problems of engagement among low-achieving students of the type illustrated in Figure 1. Does research show that the inequality in student engagement increases across grade levels? Does the use of unidimensional whole-class instruction increase across grade levels as well? If these two propositions are true, then the hypothesized relationship between engagement and activity structure is certainly plausible. To answer the first question, we searched for studies that provided separate estimates of engagement, or any of several engagement-related concepts (school attachment, achievement motivation, perceived competence, self-esteem, and participation) among high- and low-achieving students across different grade levels. To answer the second question, we searched for large-scale databases that reported estimates of the use of different activity structures. Databases were identified that used multiple methodologies (observation, student-reports, teacher reports) and typologies of activity structure.

#### DOES THE INEQUALITY IN STUDENT ENGAGEMENT INCREASE ACROSS GRADE LEVELS?

It is obvious to educators, parents, and researchers that some individual students become more withdrawn from school and disengaged over time (Spivack & Cianci, 1987). Are low-achieving students especially at risk as they struggle to maintain a positive sense of self-worth at school?

Eccles and Midgley (1989) reviewed a large number of studies on the changing engagement of students through elementary school and across the transition to junior high school. They noted that "although these changes are not extreme for most adolescents, there is sufficient evidence of a gradual decline in various indicators of academic motivation—such as attention in class, school attendance, and self-perception—over the early adolescent years to make one wonder what is happening" (p. 91). Although some engagement indicators, such as liking school, self-esteem, and achievement motivation, did not decline uniformly, levels of perceived academic competence did fall across that time (Eccles et al., 1983; Marsh, Barnes, Cairns, & Tidman, 1984; Stipek & MacIver, 1989). This pattern remains strong in recent studies of child development. Analyses from the Michigan Childhood and Beyond Study (CBS) found that perceived competencies in math, reading, music, and even sports decreased in Grades 1-6 (Wigfield et al., 1997) and continued to decrease through 12th grade (Fredericks & Eccles, 2002). Examining change in another predictor of engagement, students' intrinsic motivation, Harter (1981) found that students' preference for challenge, curiosity/interest, and independent mastery, three indicators of intrinsic motivation, decreased across Grades 3-9, whereas two others, independent judgment and internal criteria for success, increased. Perhaps shifts toward internal criteria for success reflect a self-protective strategy in the face of negative evaluations. Although we find the evidence of a decrease in certain psychological predictors of school success persuasive, there are two reasons to question the link between whole-class instruction and these processes.

First, the general declines in perceived competence have been attributed to multiple factors. These include cognitive development (the ability to make social comparisons) and the evaluation practices used in schools, such as ability grouping and normative grading practices, emphasis on grades, and use of standardized achievement tests and college entrance exams, among others. Stipek and MacIver (1989) noted that the increased availability of such criteria would probably lead to further decreases in students' perceptions of their competence. Therefore, there are many possible sources of the decline in students' perception of their competency besides whole-class instruction.

Second, the studies that have found declines in average levels of perceived competence do not necessarily speak to low-achieving students in particular. A few studies do address this question. Youngman (1978) examined a high-achieving rural group of students and a low-achieving urban group as they made the transition to secondary school. The low-achieving group experienced a dramatic improvement in their attitudes toward school, both in the absolute sense and relative to the high-achieving sample. In the Transitions to Early Adolescence Project, Midgley, Feldlaufer, and Eccles (1989a, 1989b) examined the intrinsic value and importance/usefulness that high- and low-achieving students placed on mathematics in Grades 6 and 7, and their perceived performance and expectations of success in mathematics. Intrinsic value and importance increased among both high- and low-achieving students across the transition to Grade 7, and low-achieving students actually scored about the same or higher on both measures than high-achieving students. Expectancies of success and perceived performance were lower for low-achieving students and decreased among both



high- and low-achieving students over Grades 6-7, but at about the same rates. They did find however, that low-achieving students were more negatively affected when the transition was accompanied by a decrease in teacher support or teacher efficacy. In sum, most studies reported general declines in perceived competence but did not relate them to either achievement levels of students or to classroom activity structure. The few studies that did relate them to achievement levels reported mixed results.

In addition to studies of perceived competence, a few studies have examined changing levels of engagement itself. Good, Slavings, Havel, and Emerson (1987) studied students' question-asking across grade levels and found that the gap in classroom participation among high- and low-achieving students increased as students aged. Question-asking in the early grades was evenly distributed among high and low achievers, but by sixth grade, low-achieving students were becoming more passive. By high school, low-achieving students asked approximately only a third as many questions as high-achieving students.

Marks (2000) examined achievement and engagement in a sample of 48 elementary school, 46 middle school, and 49 high school classrooms using student report measures of engagement and standardized tests (National Assessment of Educational Progress questions). In the sample as a whole, engagement was somewhat lower in middle schools and high schools than in elementary schools. Contrary to the hypothesis that low-achieving students become increasingly disengaged over time, Marks found a statistically significant positive relationship between achievement and engagement in the elementary sample but not in the middle school or high school samples.

Thus, there has not been convincing evidence that engagement among high- and low-achieving students becomes increasingly polarized as they progress through school. The Good et al. (1987) analysis was cross-sectional in nature, and those findings are contradicted by those of Marks (2000). The specific form of engagement that Good et al. examined, participation in classroom discourse, may very well become increasingly polarized, but that does not mean that the same phenomenon holds for overall levels of engagement. Even if the inequality in engagement does increase as students progress through school, with low-achieving students becoming increasingly disengaged, can that process be explained by an increase in the use of whole-class instruction?

#### THE PREVALENCE OF WHOLE-CLASS INSTRUCTION

Eccles and Midgley (1989) asserted that whole-class instruction becomes more common in later grades. As corroboration, Feldlaufer, Midgley, and Eccles (1988) found that whole-class task organization increased as students in 117 sixth-grade classrooms moved to 138 seventh-grade classrooms in Michigan. Table 1 provides estimates of the prevalence of whole-class instruction across grade levels from multiple large-scale educational databases. The databases in Table 1 used different methodologies to measure classroom instruction, including teacher reports (ECLS, NELS88, and the 94-95 TFS), observational studies (the CELA studies), and student reports (the SLOAN study), so only rough comparisons are possible. Several conclusions emerge from Table 1. First, by high school, whole-class instruction is a common activity structure that accounts for a substantial proportion of total instructional time. Second, differences in the prevalence of whole-class instruction between middle and high school are modest, if there is any increase at all. Third, there may be an increase in the use of whole-class instruction from elementary to middle school (Feldlaufer et al., 1988). However, although it is difficult to compare the ECLS data in Grades 1 and 3 with the other studies, that data suggest that whole-class instruction is already a common activity structure in elementary school. Finally, there are few differences across subject matter in use of whole-class instruction.

**Table 1. Estimates of the Prevalence of Whole-Class Instruction Across Grade Level**

Database	Grade level(s)	Subject matter(s)	Prevalence of whole-class instruction
Early Childhood Longitudinal Study (ECLS)	1-3	Combined classrooms	84.3% of first-grade teachers and 78.6% of third-grade teachers report spending 2 or more hours a day in whole-class instruction.
Transitions at Early Adolescence Project (Feldlaufer et al. 1988)	7-8	Mathematics	Student, teacher, and observer reports of the prevalence of small-group and individual work declined from Grade 6 to Grade 7. Observer decline was .22 on a scale of 1-3.
CELA Partnership for Literacy study	7-8	English/language arts	Whole-class activities (lecture, Q&A, reading aloud, and student presentations) constitute 61.3% of total instructional time.
CELA Opening Dialogue Study	8-9	English/language arts	Two whole-class activities (lecture and Q&A sessions) constitute 42.9% and 62% of total instructional time among eighth- and ninth-grade classrooms.



CELA National Study	7-11	English/language arts	Whole-class activities (lecture, Q&A, reading-aloud, and student presentations) constitute 63.5% of total instructional time. Almost exactly the same at all grade levels.
National Educational Longitudinal Survey of 1988 (NELS)	8-10	Math/science & English/social studies	66.3% of 10th-grade teachers and 56.9% of 12th-grade math/science teachers spend 50% or more of time in whole-class instruction. In eighth grade, 48.7% report spending 3 hours or more per week (in a 4-5-hour-per-week class) using whole-class instruction, 81.7% report spending 2 hours or more. Differences across subject matter are small.
Sloan Study of Youth and Social Development <sup>a</sup>	10-12	All subjects	High school students in all subjects spend a substantial amount of time in whole-class activities like lectures (21% of the time).
1994-95 Teacher Follow-Up Survey (TFS)	All grades	All subjects	Over 98% of teachers report using whole-class instruction at least once a week.

<sup>a</sup> The Sloan Study used a reduced set of instructional categories to be coded by students.

The CELA data contain the most detailed time-use data on different forms of instruction, although those studies were restricted to English and language arts classrooms. In three separate studies involving hundreds of classrooms, whole-class instruction accounted for 43%-64% of the total instructional time. In one of the CELA studies, differences emerged between eighth- and ninth-grade classrooms, but the other two studies show no increase in the use of whole-class instruction as children progress to later grades. Contrary to the hypothesis that students spend an increasing proportion of time in whole-class instruction as they go through school (Eccles & Midgley, 1989), whole-class methods of instruction such as lecture, Q&A sessions, and reading aloud appear to be well integrated into many teachers' lessons, even in the earliest grades. Any change across grade levels appears to be a modest change regarding the extent to which whole-class instruction is used, not a categorical difference in the nature of classroom instruction.

## SUMMARY

The prevalence of whole-class instruction may very well provide the context for the reduced engagement of low-achieving students, as other researchers have assumed. However, there is little evidence for the proposition that a dramatic increase in whole-class instruction in middle and high schools is responsible for increasing problems of achievement motivation, as Eccles and Midgley proposed (1989). First, although the average levels of certain engagement-related constructs decrease significantly in the later grades, there is no evidence that the distribution of engagement among high- and low-achieving students changes over time. More evidence is available concerning the other claim in Figure 1: that whole-class instruction becomes much more prevalent in later grades. Data from a number of nationally representative surveys indicate that instead, whole-class instruction is widely used in America's schools in all subjects and at all grade levels. There simply is no evidence that whole-class instruction becomes dramatically more prevalent in the later grades.

Comparing global trends in engagement with trends in the use of activity structures is only an indirect way to assess a relationship between classroom instruction and engagement, because any number of other effects could explain observed changes in engagement among high- and low-achieving students. A more direct approach is to observe levels of engagement in classrooms that differ in activity structure.

## DIRECT EVIDENCE OF THE RELATIONSHIP BETWEEN CLASSROOM ACTIVITY STRUCTURE AND THE DISTRIBUTION OF STUDENT ENGAGEMENT WITHIN CLASSROOMS

In this section, we consider evidence of the form illustrated in Figure 2: observations of classrooms that differ in their use of activity structures, and the associated behavior of high- and low-achieving students in those classrooms. In reviewing the evidence, we searched for studies, both qualitative and quantitative, that investigated the association between activity structure and engagement, or social-psychological correlates of engagement, among high- and low-achieving students. We used an inclusive definition of activity structure, engagement, and student achievement, including studies of closely related concepts. Few studies meet even inclusive criteria, however, because most research reports only average levels of engagement.

## QUALITATIVE STUDIES OF THE EFFECTS OF ACTIVITY STRUCTURE



Comparative studies of classrooms and schools with different motivational climates provide evidence that the nature of classroom evaluation can influence levels of student engagement among students of different achievement levels. In his analysis of third- and fourth-grade classrooms, Bossert (1979) focused on the effects of whole-class, recitation-style instruction, as opposed to multitask learning in small groups or individually. His portraits of classroom instruction highlight the ways that both teachers and students become highly attuned to academic performance in classrooms in which recitation-style instruction predominates. In recitation-style classrooms, teachers come to rely heavily on the “best” students to keep instruction flowing; it is the top-performing students who participate most frequently in the recitation. Moreover, when students do engage in group work in these classrooms, they identify and attempt to partner with students known to excel.

In *Different by Design*, Metz (1986/2003) considered two middle schools offering nontraditional curricula. Her findings linking patterns of evaluation to levels of student engagement paralleled those of Bossert’s (1979) but on a larger scale. In the schools Metz observed, the tasks that students performed were diverse and often specific to individuals or small groups of students. Whole-class instruction was not the dominant method of instruction, and evaluation was designed to stress student effort and improvement rather than point-in-time skill mastery. In addition, instruction was individualized to the point where teacher evaluations were relatively private. Metz found that in these schools, especially when individual teachers embraced the school’s model fully, low-achieving students exhibited relatively high levels of achievement motivation and engagement.

#### QUANTITATIVE ANALYSES OF THE EFFECTS OF ACTIVITY STRUCTURE

In this section, we consider research that explicitly measures variation in activity structures across classrooms and links activity structures with levels of engagement among diverse students quantitatively. The initial research on activity structures characterized classrooms as unidimensional versus multidimensional. Rather than measuring levels of engagement, this research considered the related construct of perceived competence as the outcome of interest. In a sample of 16 third-grade classrooms (Simpson, 1981) and 15 fifth- and sixth-grade classrooms (Rosenholtz & Rosenholtz, 1981), the authors found in unidimensional classrooms (1) an increased proportion of students reporting below average ability levels, (2) a higher peer consensus of ability (Simpson, 1981), and (3) that students were more likely to rate each other’s ability as high or low rather than as being on a similar level (i.e., there was greater dispersion). The authors also noted that evaluations by others figured more heavily in students’ self-evaluations in unidimensional classrooms (see also Rosenholtz & Wilson, 1980). Presumably then, unidimensional classrooms, which frequently use whole-class methods of instruction, set the stage for problems of motivation and engagement among low-achieving students.

Subsequent research using this paradigm tested this hypothesis more directly. MacIver (1988) examined the dispersion of student self-perceptions of competence, a correlate of engagement, in 67 upper elementary mathematics classrooms. Specifically, he asked them to respond “yes” or “no” to the question, “Are you good at math?” In classrooms with undifferentiated classroom tasks (such as whole-class instruction), the variance in students’ reports of competence was much greater, and average levels of perceived competence were lower.<sup>1</sup>

The development of complex instruction (CI) by Elizabeth Cohen and colleagues (Cohen & Lotan, 1997) represents a remarkable effort to address motivational climates in heterogeneous classrooms. In CI, teachers are encouraged to reduce whole-class instruction. Instead, CI teachers delegate responsibility to small groups to carry out lessons, rotating the authority of managing the procedural aspects of the lesson to different students in the group. Teachers are also instructed in how to directly encourage equal participation by cultivating an orientation among students that completing classroom tasks requires multiple abilities, and by assigning competence to low-status students by specific, favorable, and public statements to work groups. CI is an effort to alter the structure of classroom activities in such a way as to make personal attention and mentoring possible. As one step in assessing CI, the research team documented levels of participation among students whose classmates perceived them as less capable and popular (low status). In their elementary school samples, CI researchers found that use of CI increased participation among low-status students. No effect was found in their middle school sample. Unfortunately, this research did not isolate the effects of activity structure from the other innovative elements of CI.

Using the Partnership for Literacy Study data, a large observational study of instruction in middle school English and language arts classrooms (Langer, Applebee, & Nystrand 2005), Kelly (2008) found that, consistent with Bossert’s (1979) portrait of recitation-style instruction, high-achieving students are much more likely to participate in Q&A sessions than low-achieving students. The Partnership for Literacy study is well suited to analyzing the relationship between classroom instruction and engagement. The CLASS program, a real-time computer-based data collection system, provided detailed data on participation by students, as well as the teacher’s use of different instructional activities (Nystrand, 1997b). In a follow-up study, Kelly (2007) investigated the relationship between the distribution of student engagement (including participation in classroom discourse and effort on assignments and homework) and classroom activity structures. The CLASS



program identifies 15 types of classroom activity, with certain activities subdivided. Whole-class instruction was measured as the percentage of classroom time spent in lecture, question and answer, discussion, student presentations, silent reading, reading aloud, role-playing, games, or other activities. These are activities during which the teacher directed and monitored the entire class simultaneously. Silent reading, unlike other forms of "seatwork," was considered whole-class instruction because the monitoring of students required no individual teacher-student interaction other than sanctioning students for being off-task. In other forms of seatwork, like completing a worksheet, teachers are more likely to interact with individual students about the substance of the task. There was actually a greater disparity in student effort between low and high achievers in classrooms that used less whole-class instruction and more small-group and individualized instruction (Kelly, 2007).

## SUMMARY

Research on classroom evaluation has assumed that whole-class instruction presents a fundamental problem for students who enter school with weaker skills; whole-class instruction is an important *contextual* source of problems of achievement motivation and engagement. This assumption can be seen in some psychological literature on classroom motivational climates, in the research on unidimensional versus multidimensional classrooms, and in a few qualitative portraits of classroom instruction by sociologists. In some cases, researchers have taken the next step: developing specific programs designed to address problems of student engagement in the classroom, which avoid the use of whole-class methods of instruction (e.g., CI). Research on global trends in engagement across grade levels reviewed in the previous section does not support a strong concern specifically with whole-class instruction. How do we interpret the qualitative and quantitative studies of activity structure and engagement among high- and low-achieving students?

The qualitative portraits of Bossert (1979) and Metz (1986/2003) are compelling because the effects of instruction on engagement appear to be powerful. However, Bossert's analysis shows primarily an example of recitation-style instruction that disenfranchises low-achieving students, not a comparison of different forms of instruction and engagement. Because only a handful of teachers were considered, it could easily be the case that these teachers used whole-class instruction ineffectively, but other teachers were more successful. In Metz's analysis, in which very strong effects were documented, the main problem is that it is difficult to ascertain the effects of classroom activity structure on the one hand, and the effects of individualized assessment practices on the other.

The quantitative evidence that whole-class instruction is problematic is thin: A handful of studies in a few dozen classrooms have found negative effects of whole-class instruction, and these studies have several problems. The initial research on unidimensional versus multidimensional instruction included no individual predictors of motivation and engagement (such as test scores or other achievement measures); rather, they examined the dispersion, or total inequality in participation. Moreover, the research on unidimensional versus multidimensional classrooms examined only the antecedents of engagement, not actual effort or attention in class, and is contradicted by subsequent research. In an important analysis, Maclver (1988) explicitly tested the relationship between activity structure and the distribution of student perceptions of ability, a correlate of engagement, in mathematics classrooms. Unfortunately, nearly 20 years have passed, and this research has yet to be replicated in representative samples, with other measures of achievement, or with more appropriate statistical models for multilevel data. Finally, the Cohen and Lotan (1997) research did find positive effects on engagement, but only in a subset of their classrooms. Moreover the experimental implementation of CI included multiple treatment variables. Thus, it is difficult to ascertain whether the resulting levels of engagement were caused by assigning competence, cultivating a multiple-ability orientation, or the fact that instruction was carried out in small groups with high task interdependence.

Without dismissing the valuable conceptual and early empirical work on this important research question, it is clear that, compared with other important questions of classroom instructional context—such as those concerning the effects of variation in class size, teacher quality, and the use of ability grouping—educational researchers have not yet clearly documented the effects of classroom activity structure on student engagement and achievement growth. Further studies replicating and extending the model that Maclver (1988) set forth are needed.

## SMALL-GROUP ACTIVITY STRUCTURES AND ENGAGEMENT: AN ALTERNATIVE?

Despite the weak evidence for the purported negative effects of whole-class instruction, small-group instruction might appear an attractive alternative, with its potential to foster interaction and to showcase different contributions. Interestingly, social comparisons that emphasize achievement differences can just as easily occur in small groups. For example, Tammivaara (1982) found that small-group work in and of itself does not deter students from making ability attributions about other students and treating them accordingly. Nystrand's research (1997a) supports the idea that small-group instruction is often more similar to whole-class instruction than might appear at first. Nystrand found that the small-group work that he observed encompassed a range of activities, from completing worksheets essentially as individuals



seated in a group, to solving open-ended problems that require cooperation among group members. In Nystrand's study, highly prescriptive small-group work, which amounted to what he called "collaborative seatwork," actually resulted in lower achievement growth compared with classrooms using whole-class methods of instruction. This research further supports the contention that activity structure in and of itself is not as important as how the instruction is enacted. Form does not have to define function.

In the next section, we consider research that examines heterogeneous practices of whole-class instruction. Rather than calling for teachers to abandon whole-class methods of instruction and adopt small-group and more individualized modes of instruction, we describe research that addresses the quality of whole-class instruction.

Research on the nature of classroom discourse and on teacher support for student learning suggests ways in which teachers can reduce problems of student engagement among low-achieving students within the context of whole-class instruction. By carefully defining for students the complexity of schoolwork and cultivating a "multiple-ability orientation," teachers can reduce status generalizations and problems of engagement among low-achieving students, even in whole-class settings.

### ALTERNATIVE CONCEPTIONS OF WHOLE-CLASS INSTRUCTION

We believe that there are instructional practices that can help ameliorate problems of student engagement among low-achieving students regardless of classroom activity structure. Indeed, many of the instructional concepts that have been applied to the study of small groups, we argue, apply equally well to whole-class methods of instruction. For example, the key principles of CI, cultivating a multiple-ability orientation and assigning competence, can be accomplished in several instructional formats.

As with small-group instruction, whole-class instruction can be a more or less effective context for learning. Research on dialogic instruction and scaffolding instruction illustrates how variation in teacher practice might account for problems of student engagement among low-achieving students.

### DIALOGIC INSTRUCTION AND THE DISTRIBUTION OF STUDENT ENGAGEMENT

Gamoran and Nystrand (1992) argued that it is important to identify the fundamental elements of engaging instruction, that is, what teachers can do to engage students that is common across instructional activities or classroom organization. Whole-class instruction in the form of Q&A sessions is pervasive in middle school English and language arts classrooms (Nystrand, 1997a; Gamoran & Kelly, 2003). Instead of suggesting that teachers avoid whole-class instruction, we can examine ways in which the character of Q&A sessions influences levels of student engagement among diverse students. Whole-class instruction need not result in a polarization of students into low-performing disengaged students, and high-performing engaged students who do the bulk of classroom work. It is the evaluative properties of Q&A sessions, how the teacher conducts whole-class instruction, that determines whether only a few students are engaged or whether engagement is widespread. Even though classes may look similar, with the teacher directing students who raise their hands to participate in Q&A activities, the evaluative properties of the instruction vary considerably, and so does the distribution of student engagement within a classroom.

A critical component affecting whether low-achieving students put forth effort in class is the extent to which participation on classroom tasks carries the risk of negative evaluation. In the typical IRE style of instruction (Mehan 1979), participation is inherently risky. Typically, the teacher's questions focus only on eliciting the correct response from students. The goal is not so much to provoke student thought and analysis, but to transmit a specific, common understanding to students and/or evaluate whether students hold the common understanding. This can be contrasted with Q&A sessions that are designed to provoke independent student thought and analysis, the goal being for the students to develop individual analyses or arguments about the text rather than to reach a consensus of right or wrong. When evaluations do occur, students' responses are assumed to have merit and to be carefully considered before being evaluated. In contrast, in IRE sessions, evaluations are more frequent, immediate, and nonnegotiable.

When teachers ask questions designed to provoke independent thought and analysis, and postpone evaluation of the merit of a student's response, they reduce the risk of negative evaluations and accomplish two ancillary goals as well. First, they relinquish some authority over the direction of learning to students. When questions are designed to provoke independent thought and a student chooses to voice an analysis that is not immediately evaluated by the teacher, the student's reward is that she or he gets to influence the topic under discussion as the class ponders his or her response. It is not surprising that students' perceptions of control have been linked to their levels of interest and engagement in classroom tasks (Ames, 1992; Assor, Kaplan, & Roth, 2002).

A second goal, that of taking students seriously, can also be accomplished when teachers break from the IRE pattern of



instruction (Gamoran & Nystrand, 1992).<sup>2</sup> When evaluation is deferred, teachers send the message that the student's analysis has some merit, even if it is later found to be inadequate. This presumption of value is important to fostering future engagement because students know that prior responses that may have been hasty or ill-thought-out will not be held against them. Beyond deferring evaluation, student ideas are taken seriously when students have the chance to make unique contributions that enhance the class's understanding of a topic. Making a unique contribution is unlikely when teachers ask questions that have a predetermined answer. Students have the greatest opportunity to make unique contributions when discussions occur that allow for free exchanges of ideas and information. If students are regularly taken seriously, they are more likely to put forth the effort to ask and answer questions.

Using this conceptualization of evaluation and dialogic properties of instruction, Kelly (2007) examined the distribution of student engagement in the Partnership for Literacy Study data, a recent observational study of instruction in over 100 middle school English or language arts classrooms. For each classroom, inequality parameters were generated that captured the total inequality in student engagement among all students, and the inequality in student engagement due to differences in engagement among high- and low-achieving students. Kelly found that in classrooms in which teachers emphasized dialogic instruction during Q&A sessions by asking authentic questions, incorporating student responses and ideas into the flow of classroom discourse (used uptake), and focusing on analysis and generalization rather than memorizing facts, the distribution of student effort in the classroom as a whole was more even, and there was less of a difference in the level of effort put forth by high- and low-achieving students.

#### SCAFFOLDING LEARNING AND MOTIVATION IN WHOLE-CLASS DISCOURSE

In a similar vein, Turner and her colleagues (2002) studied the variability of whole-class teacher discourse and its relation to student motivation and reports of avoidance behaviors in mathematics classes. Whole-class instruction is ubiquitous in American mathematics classrooms and was the predominant mode of instruction in nine observed sixth-grade classrooms. Turner and colleagues hypothesized that different types of whole-class discourse would be related to different student reports of motivation. Specifically, they argued that scaffolding forms of instructional and motivational discourse would be related to student reports of a focus on learning and engagement in the class, and fewer avoidance behaviors. Avoidance behaviors are defensive, self-protective measures, such as using procrastination as an excuse for a low grade or not asking for help when needed, and are a form of disengagement. Examples of instructional scaffolding included modeling thinking, providing hints, asking students to explain, and giving feedback about progress. Motivational scaffolding encompassed encouraging students, treating errors as opportunities, reducing anxiety, and emphasizing joint responsibilities among teachers and students. Theoretically, scaffolding discourse should engage lower ability students and offer them opportunities to learn and achieve, as well as foster effort. As a result, these students would be less likely to succumb to avoidance behaviors because they would perceive their classes as supportive rather than evaluative.

Conversely, in classrooms in which teachers used whole-class instruction to "pull" correct answers and to evaluate students (e.g., IRE), students would report a focus on social comparison and evaluation. Low-achieving students' self-competence would be the most vulnerable because this type of discourse offers fewer opportunities to increase understanding, provides public evidence of lower achievement, and discourages effort. Therefore, these students would be more likely to adopt avoidance behaviors.

As predicted, the students in classrooms in which teachers used scaffolding forms of whole-class discourse reported a significantly greater emphasis on learning and improvement and significantly lower use of avoidance behaviors. Not only was the instructional discourse directed at helping all students understand and explain, but also, the motivational discourse conveyed the teachers' high expectations, beliefs in student mathematical competence, and general enjoyment of "talking about" mathematics with the students. These teachers were the most likely to transfer the task to students, giving them greater opportunities to demonstrate their expertise and develop self-competence in mathematics.

Analyses did not explicitly test whether low and high achievers reported similarly low incidences of avoidance behaviors in classrooms with high scaffolding discourse. The aggregate responses of heterogeneous classes in which teachers scaffolded learning and motivation indicated low reports of avoidance behaviors. In contrast, heterogeneously grouped students in classes in which teachers used more directive and evaluative discourse reported, in the aggregate, that they used avoidance behaviors more often. These results demonstrate a class effect, indicating that students of a range of achievement levels responded similarly in these classrooms.

Turner and Patrick (2004) provided a more direct examination of how whole-class scaffolding discourse was related to the motivation and engagement of low achievers. This study described two students—Shanida, a low achiever, and Justin, a high achiever—and their participation in the same sixth-grade mathematics class. It followed them into two different seventh-grade mathematics classes. The study focused particularly on how teacher discourse provided opportunities and constraints for the students' participation.



The whole-class discourse in the sixth-grade class did focus on helping students understand, but this message was frequently undercut by a tendency to emphasize accuracy and speed over understanding, and on social comparison. Similar to teachers in Bossert's (1979) study, when a question was difficult, the teacher tended to call on high achievers. As a result, she called on Justin more frequently than Shanida. In addition, the teacher scaffolded Justin's participation, refusing to let him give up before he solved the problem. Conversely, the teacher called on Shanida less and often moved on to others when Shanida did not know the answer. One time, the teacher publicly ridiculed Shanida for doing a task incorrectly. Thus, the instructional and motivational scaffolding, when it occurred, was differentially offered to Justin and Shanida and to high and low achievers generally.

In seventh grade, Justin entered a prealgebra class, and Shanida joined a regular mathematics class. Justin's teacher used a fair amount of whole-class scaffolding discourse, but she called mostly on volunteers. Justin did not volunteer in this class, and thus he had few opportunities to participate. The teacher did not require everyone to participate; therefore, the affordances of her scaffolding discourse were available to some, but not to all. Shanida participated more frequently in her seventh-grade class than she had in sixth grade. Although she often made mistakes when demonstrating her solutions at the board, the teacher offered her consistent instructional and motivational scaffolding, such as reassuring her, "you knew that." In a problem-solving exercise with a partner, the teacher commented, "Oh, this is a clever girl. That is a very good strategy," and asked her to work with a student having difficulty. Later in the year, the teacher allowed Shanida to alter a class project to make it more meaningful for her and the class. By this time, Shanida had developed a sense of confidence and enjoyed the mathematics class enough to care greatly about her project.


This case study illustrates that, in the case of Shanida at least, scaffolding discourse helped facilitate a change in participation from sixth to seventh grade, and it not only supported her mathematical understanding but also fostered her motivation and self-competence. Most important, though, these data demonstrate the complexity of whole-class discourse. On the one hand, affordances, such as whole-class scaffolding instructional and motivational discourse, can be facilitative for low achievers. On the other hand, scaffolding discourse could be entirely absent, or unevenly applied. Moreover, students' opportunities to benefit from scaffolding are contingent on participation; the effects of scaffolding are moderated when students do not make bids to participate or when teachers call on students unevenly. Whole-class discourse can present low-achieving students with risks and frustrations, or it can be used to foster achievement and motivation.

## CONCLUSION

In this article, we argued that wholesale characterizations of activity structures—whether whole-class, small group, or individualized—as engaging (or not) for low-achieving students may miss the mark. The use of alternative activity structures to prevent or address problems of engagement among low-achieving students can be conceptualized as a "macro" adaptation to learner variation (Corno & Snow, 1986; Randi & Corno, 2005). In contrast, the research on classroom discourse and engagement that we have described places an emphasis on "micro" adaptations by teachers—approaches that teachers can take, often at the level of individual utterances, to promote engagement. The desirable properties that might be more prevalent in small-group instruction—such as a favorable evaluative climate, or emphasis on mastery rather than performance goals—can be explicitly incorporated into whole-class instruction without a wholesale change in a teacher's use of activity structures.

Moreover, we have emphasized alternative conceptions of whole-class instruction because we believe that few of the instructional activities that constitute whole-class instruction are inherently problematic for low-achieving students. Delivering a lecture, holding a Q&A session, or leading the class in a discussion are all classroom activities that can develop or hinder motivation for low-achieving students. Instead of emphasizing social comparison, whole-class instruction can be used to honor a variety of ideas, to help students develop their thinking and arguments, or to demonstrate the value of "mistakes" for learning. Classrooms can foster a kind of "motivational equity" in which the emphasis is on learning rather than on competition, and participation and effort do not seem so risky for low-achieving students. One important determinant of these desirable motivational contexts is the nature of classroom discourse. How whole-class instruction is implemented is crucial to students' sense of self-worth and to students' engagement.

## Acknowledgements

The authors would like to thank Keirya R. Langkamp for her assistance on this project. Please direct correspondence to Sean Kelly, Center for Research on Educational Opportunity, 1015 Flanner Hall, University of Notre Dame, Notre Dame, IN 46556-5611. Phone:  574-231-3166 . E-mail: [kelly.206@nd.edu](mailto:kelly.206@nd.edu)



## Notes

1. Under this specification, average levels of students' competence in a class are closely related to differences in the variance of student competence; the variance of a binomial variable is a simple function of the proportion itself.  $F^2 = p(1 - p)$  where  $p$  is a proportion  $0 < p < 1$ .
2. "Taking Students Seriously" is the title of Gamoran and Nystrand's (1992) book chapter about fostering engagement through dialogic instruction.

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**Cite This Article as:** *Teachers College Record* Volume 111 Number 7, 2009, p. 1665-1692  
<http://www.tcrecord.org> ID Number: 15308, Date Accessed: 7/7/2009 10:06:17 AM

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